

**Asian Biting Fly Studies VI:
Records and New Species of Oriental Haematopotini (Diptera:
Tabanidae)
from Nepal, Thailand, Laos and Cambodia**

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The adult Oriental Haematopotini have been documented by Stone and Philip (1974) to a point where it would seem little could be added to our knowledge of the tribe without extensive specialized collecting. Nevertheless, the Oriental Region continues to yield new records and new species in this unusual complex which has radiated throughout the Indian and Malayan subregions into an impressive list of closely related forms, several of which have been implicated as disease vectors. In these two subregions only two genera are involved, *Hippocentroides* Philip, 1961 and *Haematopota* Meigen, 1803; the former apparently includes two species, one of which is amply represented in this study. Based on the study by Stone and Philip, *Haematopota* includes 160 species, 5 nomina dubia and two nomina nuda. Studies by Thompson (1977) and Burger (1981) have added two species to this total.

From observations made in the present study, but requiring further examination, the generic characterization of *Haematopota* should include statements on 1: the form of the spermathecae which are not inflated apically and 2: the structure of the spermathecal ducts which are much more membranous, longer (may reach into the third abdominal segment) and more inflated than those of tabanine genera.

The following study of the distribution of 15 species of Oriental *Haematopota* includes descriptions of five new species, one each from Cambodia, Laos and Thailand and two from Nepal.

1. *Hippocentroides desmotes* Philip, 1961

1961. Philip, Indian J. Ent. 21(2):82-88, f.

1974. Stone and Philip, USDA Tech. Bull. 1489:28, f, figs. 1, 1a, 122.

1976. Matsumura and Takahasi, Japanese J. Sanit. Zool. 27(3):297, f.

In 1912, Brunetti described a unique male *Haematopota* from Dehra Dun, India. The dark wing with six very narrow incomplete hyaline transverse bands was distinct compared with all other Asian species of that genus.

Philip (1961:82) described a female tabanid with six complete transverse pale wing bands from Bengal, India. He placed it in a new monotypic genus *Hippocentroides* with the genotype *H. desmotes*. In 1974, Stone and Philip reviewed the Haematopotini and transferred the Brunetti species *striatipennis* to *Hippocentroides*.

Matsumura and Takahasi (1976:297) reported a single female of *desmotes* from Nepal. Although stating that it is a "small blackish" species, the description given by them refers to its dark brown appearance and it is particularly interesting to note that they report no abdominal pattern at all.

During 1956-57, in dense lowland jungle of southern Nepal, I took a series of

tabanids with the distinctive wing pattern of transverse bands. Specimens were taken both north and south of the Siwalik Hills. Comparison of this material with the type of *desmotes* shows differences in color and setal pattern. The integument of the Nepalese specimens is darker than the reddish-brown of Philip's specimen. The distal margin of the first four abdominal segments of the specimens from Nepal is fringed with silvery setae. These setae are underlain on the first two tergites by silvery pollinosity and laterally on the third and fourth segments. By contrast, *desmotes* has yellowish setae, reduced pollinose and setal markings on the second tergite and no markings on the third or fourth abdominal tergites. Philip described other differences in the head and wing patterns in addition to which I note a size range of 6.5 to 8.5mm.

The question arises as to the relationship of the population from southern Nepal to *striatipennis* and *desmotes*. Based on adult anatomical and pattern characteristics, it is unlikely that these forms represent three distinct species. Owing to lack of material from western India, it is not possible at this time to determine whether the type of *desmotes*, or my Nepalese material, or both, represent the female of the Brunetti species. My personal interpretation is that all these specimens could represent a single population bearing the specific name *striatipennis*. The fine condition of my material may be responsible for the apparent variation of color and pattern from the two described forms. Indeed, Stone and Philip were convinced that one of my specimens from Nepal was conspecific with *desmotes*. For the present, I will follow their conclusion that the Nepal sample represents the westernmost population of *desmotes*.

Records.—NEPAL, Amlekhganj, 19 July 1956,f; 8 July 1956,9f(Shannon trap, 500m.); 14 July 1957,f; Chisapani, 4 July 1957,2f (EIC and Ghan Sham).

2. *Haematopota abacis* Philip, 1960

1960b. *Chrysozona abacis* Philip, Fed. Malaya Inst. med. Res. St.29:29,f.

1963. *Haematopota obscurata* Philip, Pacific Insects 5:529,f,m.

1974. Stone and Philip, *ibid*:30,f,m,synonymy, figs. 50,173,174.

Record.—THAILAND, Chiangmai Province, Doi Sutep, 1000m., 8 August 1959.

This specimen was taken at the wat on Doi Sutep. Its external characteristics agree well with the description of *abacis* by Stone and Philip; their notation in regard to the dorsal margin of the subcallus, "upper margin nearly straight," is more accurate than their figure; also, the interantennal spot is wider than shown in that figure.

3. *Haematopota albofasciatipennis* Brunetti, 1912

1912. Brunetti, Indian Mus. Rec. 7(5):458,m.

1974. Stone and Philip, *ibid*:41,f,figs.68,194.

1976. Matsumura and Takahasi, *ibid*:299,f, as *H. albofasciatipennis*.

A series of twenty-nine female specimens of this species shows the following differences from the descriptions by Stone and Philip (1974) and Matsumura and Takahasi (1976): frons of the specimens from north of the Siwalik Hills (Hetaura and Chisapani) with gray to brownish pollinosity with vertexal area browner, the median spot present or absent and either set off by light pollinosity or not; with a ring, or partial ring, or virtually no silvery pollinosity around the lateral frontal spots which

are subquadrate; basal callus shiny dark brown; face immediately below antennae slightly darker than remainder and gena. Stone and Philip describe the w/h of the frons as subequal; my material differs with a w/h of $3/2$. Scutellar stripes indistinct. Foretibia with basal third white; midtibia with two white bands more or less distinctly divided, the basitarsus white with a narrow dark distal band; hindtibia with at least one distinct white band, a second poorly defined band also present, basitarsus as for midleg. Abdominal sternites dark with narrow light posterior margins.

Specimens from Mile 4, north of Amlekhganj and on the southern slope of the Siwalik Hills, appear even lighter brown than other specimens. Scutal stripes are not evident or are hardly developed. Basal callus brown to dark red-brown with a dark median line from the point of the basal callus onto the blackish-gray pollinose frons. The hindtibial white mark may be reduced to a single distinct basal band or with the median white band reduced and best developed on the median aspect; the basitarsus of both the mid and hindlegs is dark apically. Specimens from Amlekhganj show variation similar to that of the material from Mile 4. The wing of the material from north of the Siwaliks is proportionally broader and with a more broadly rounded anal area than that from the southern slope. Limited dissections show variances in the form of the spermathecae, those from Hetaura appearing much less sclerotized and with reduced pigmentation. Both forms have medianly enlarged spermathecal ducts.

Records.—NEPAL, Rapti Valley, Hetaura, 520m., 14 April 1956, 12f; Chisapani, 4 July 1957, 2f. Amlekhganj, 520m., 6 June, f; 14 June, f; 19 June 1956, 2f; 5 July 1957 (500m.), 7f. Mile 4, 560m., 5 July 1957, 3f. Some specimens were taken by hand net, but those from Hetaura and two from Amlekhganj were taken in a Shannon trap and one was taken at a light in Amlekhganj.

4. *Haematopota assamensis* Ricardo, 1911

1911. Ricardo, Indian Mus. Rec. 4(9):343, f.

1974. Stone and Philip, *ibid*:50, f, figs. 17, 138.

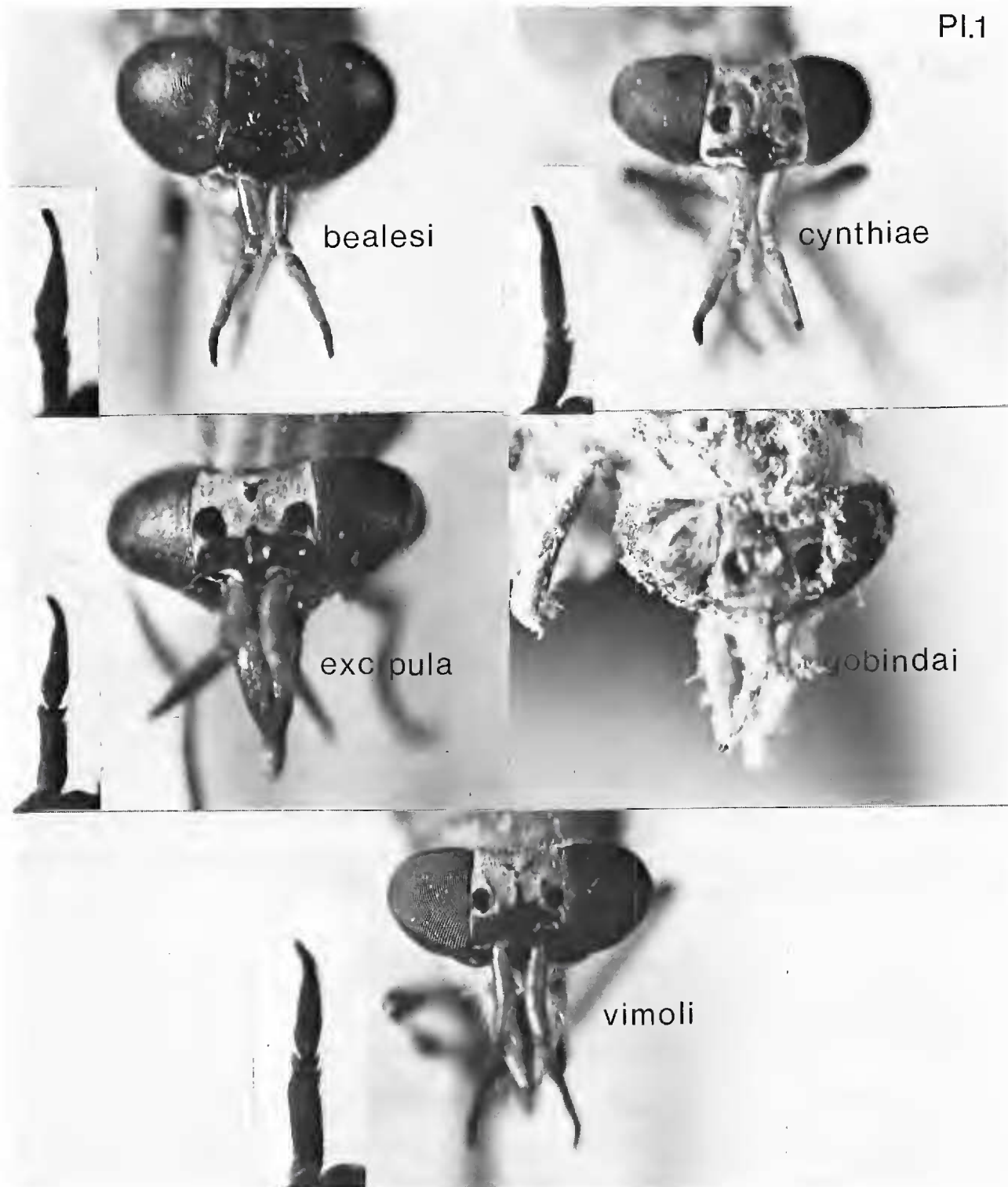
Records.—NEPAL, Amlekhganj, 15 April 1956, f; 18 May 1957, f.

The fly taken in April was on a cow in an open pasture area. These records extend the range of this species 600 miles westward from Assam.

5. *Haematopota bealesi* Coher, NEW SPECIES

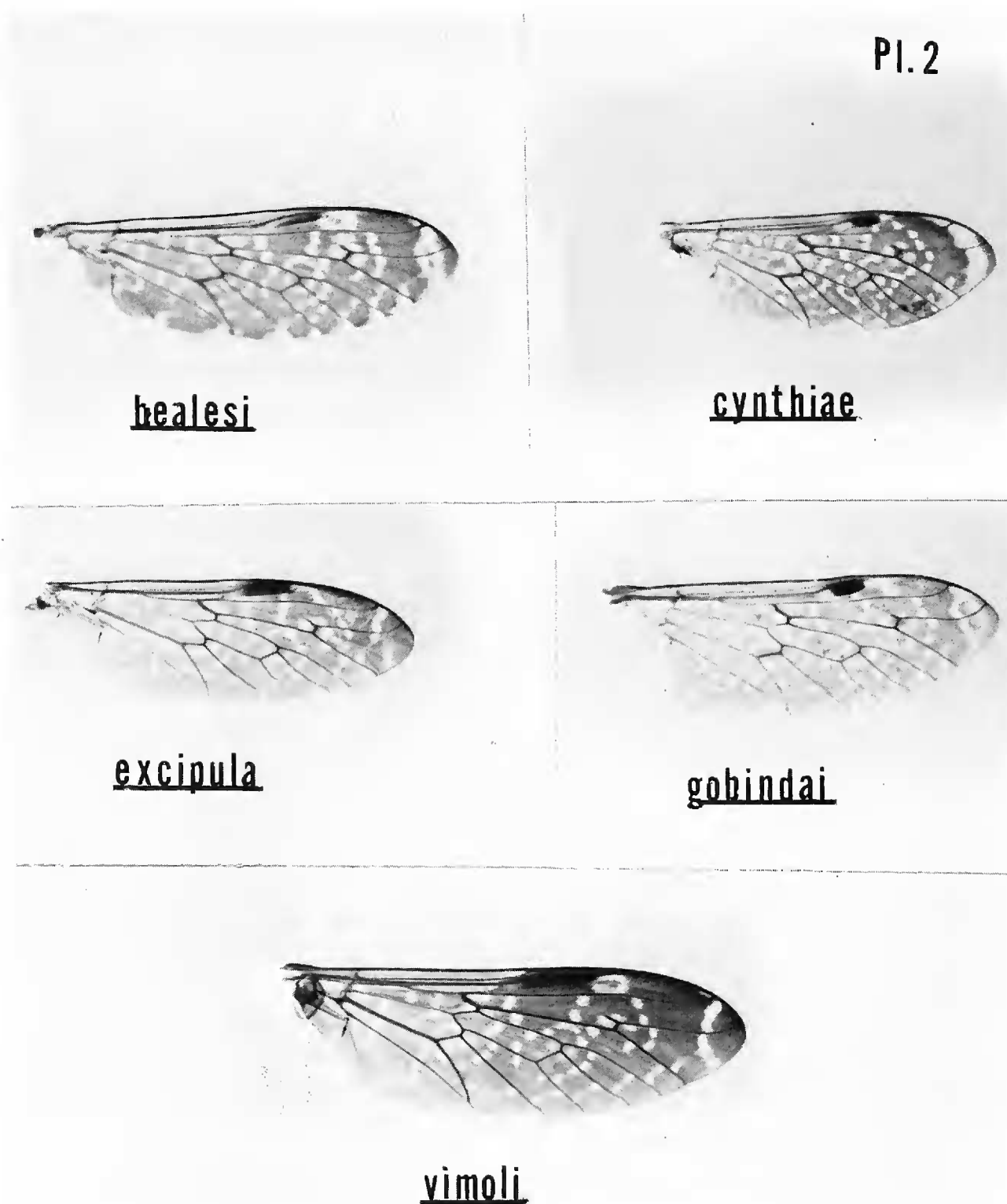
A unique specimen from Laos not clearly related to any Oriental species known to me with the exception perhaps of *H. tenasserimi* Szilady, 1926.

Female.—8mm. Head: Frons (Pl. 1) width/height subequal, with a large black pollinose subtrapezoidal area, emarginate at dorsal margin where apex of vertex intrudes, less so at ventral margin, vertexal area lighter with short black setae and some shorter pilosity which produces silvery reflections; callus dark red-brown with a dome-shaped margin intruding into the frontal pattern; subcallus wide, somewhat lighter color than the callus, cleft and with narrow lateral projections which are widened apically; face whitish pollinose with brownish subtriangular areas below each antenna and with a median brownish longitudinal stripe that reaches their confluence; parafacials whitish pollinose; beard white; antenna (Pl. 1) with scape narrow and slightly shorter than the flagellomere; apex of style narrowly dark; palpus light brown with dark setae. Eye: (Pl. 1) globose, particularly as compared to other species. Thorax: scutum dark with black setae dominant on central disc and towards



Pl. 1. Head, showing frons and antenna of *Haematopota bealesi*, *H. cynthiae*, *H. excipula*, *H. gobindai* and *H. vimola*.

the median anterior margin, golden setae dominant on lateral margins, posteriorly and onto anterior scutellum which is otherwise dark with black setae. Wing: (Pl. 2) with a broad apical hyaline band in which there is an isolated spot intersecting the upper branch of the third vein. Halter: stem and knob whitish. Legs: dark brown with white or lighter markings as follows: basal five-sixth of foretibia whitish; basal half of mid femur lighter brown-yellow; midtibia with two narrow yellowish rings, one of which is about one-third the distance from the base, the second about one-third the distance from the apex; hind femur somewhat lighter; hind tibia with a narrow sub-basal whitish ring and a similar incomplete ring about two-thirds the distance from the base. Abdomen: tergites dark brown with very narrow light pollinose



Pl. 2. Wings of *Haematopota bealesi*, *H. cynthiae*, *H. excipula*, *H. gobindai* and *H. vimola*.

posterior margins on TII-TVI, TI-TII with grayish lateral pollinosity; SI-SIII and anterior SIV more reddish brown, SII-SVI with a hint of a lighter posterior margin.

Holotype female.—LAOS, Vientiane-Pak San Rd., 80 miles E., 21 June 1959 (P. F. Beales). In the collection of the California Academy of Sciences.

H. bealesi is most closely related to *H. tenasserimi* but is easily separable from that species on the basis of the extent of the pollinose area of its frons and the subequal w/h of the frons, the proportions of the antennal segments, and the pattern of the apical hyaline area of the wing.

It gives me great pleasure to name this species for Dr. Peter F. Beales, W.H.O., who helped to collect many of the specimens in this study and who obliged me by collecting material during trips he made to Laos and Cambodia.

6. *Haematopota bicolor* Stone and Philip, 1974

1974. Stone and Philip, *ibid*: 57, f, figs. 41, 165.

Records. — NEPAL, Amlekhganj, 1956, 520m., 6 June, 2f; 14 June, f; 16 June, f; 29 July, 2f; 30 July, f; 14 Aug., 5f; 28 Sept., f. 500m., 8 July, 2f; 13 July, 3f; 29 Aug. 1957, 2f; Baridamar, 6 Aug. 1956, 2f.

These lowland forms of *bicolor* do not appear different from the boreal populations reported from Assam and northcentral Nepal. However, one specimen taken 8 August at Amlekhganj is longer by 2mm. and with a wider abdomen than the remainder of the series; its wing markings in aggregate are the most different of the entire series, but, its variations appear in other combinations in other specimens.

7. *Haematopota cilipes* Bigot, 1890

1890. Bigot. Paris Mus. d'Hist. Nat. Nouvelle Arch. (3)2:205, f.

1974. Stone and Philip, *ibid*: 74, f, figs. 7, 128.

The five specimens taken in southern Thailand not only differ in some details from the description given by Stone and Philip but also differ from each other. The principal variations occur as follows: frontal callus with dorsal median point varying in shape to as much as a broad rectangular area; frontal spots of four specimens more subquadrate than the figure of Stone and Philip and with at least some light brown pollinosity marginally; median frontal spot small and light-colored on four specimens; scutal stripes developed only on the anterior margin of the scutum; scutal and scutellar setae golden yellow; posterior scutellar crescents fused medially on some specimens; mid and hind tibial bands not always well-defined and may appear as a single long light band; two of the specimens with a narrow median diagonal dark stripe through the subapical hyaline band of the wing.

Records. — THAILAND, Trang Province (no data), f; Lamor Vill. #3, 8 June 1960, f; Chong, 15 June 1960, 3f.

The place of capture for all the specimens with full data, places this as a jungle inhabiting species.

8. *Haematopota cynthiae* Coher, NEW SPECIES

Female. — 7mm. Head: Frons (Pl. 1) width/height 6/5, clothed with gray pollinosity, subcircular lateral spots black, separated by half their diameter from the callus and surrounded by whitish pollinosity with a sparse but noticeable tuft of white setae below each; vertex gray pollinose, apical vertexal spot with white pollinosity below and a narrow median white pollinose line above; callus red-brown with a strongly bowed dorsal margin; subcallus cleft, dark brown; face white pollinose; parafacials with a small dark comma-shaped lateral mark; beardless; antenna (Pl. 1) with scape/flagellomere 5/6, scape yellowish and slightly thicker than the width of the widest part of the flagellomere which is brownish and narrow, style dark brown; palpus dark cream-colored with brownish setae. Thorax: median gray scutellar stripe short and narrow, sublateral gray stripes longer and broader, disc with short golden setae intermixed with brown setae; scutellar setae brown; pleura whitish pollinose. Wing: (Pl. 2) much like *albofasciatipennis* but with apical hyaline band intruding into the apex of the marginal cell; hind margin broadly hyaline including the anal region, joined or not to subapical hyaline transverse band. Halter: cream-colored stem and brown knob. Legs: brown with white markings as follows: foreleg dark brown,

foretibia with front surface two-thirds white, reduced obliquely to one-third of lateral surface; midleg light brown with basal four-fifths of tibia white and basitarsus white except for narrow distal brown ring, tarsal segments showing basal white; hind leg light brown with basal third of tibia diffuse whitish, basitarsus white with a narrow distal dark ring, tarsal segments with basal white. Abdomen: TII-TVI with submedian rows of white pollinose spots within a more diffuse lateral white pollinose area and with light-colored setae; TIII-TVI with a narrowly lighter posterior margin; sternites darkening posteriorly, SII-SVI with narrow lighter posterior margins, setae light-colored.

Holotype female. —NEPAL, 520m., Rapti Valley, Hetaura, 14 April 1956. In the collection of the California Academy of Sciences.

Paratopotype. —female with the same data.

Both specimens were taken flying with *albofasciatipennis*. To the eye, they are more robust and larger and the wings are not as deeply infuscated. The lateral frontal spots are smaller and rounder and surrounded by silvery pollinosity. The pattern of the vertexal area is reduced and silvery pollinosity lies below the median spot and continues as a faint median vertexal line. The scutal pattern of stripes is strongly developed. TIII-TVI show well-developed submedian light spots. The subapical spot of the wing is much longer and somewhat broader and the hind margin of the wing is at least twice as broadly hyaline.

This sibling of *albofasciatipennis*, flying with that species, is easily separated from its 'twin' by the form of the frontal black spots, the length of the subapical hyaline band and the wide posterior hyaline band on the posterior margin of the wing. I take great pleasure in naming this species for my wife, also a twin.

9. *Haematopota excipula* Coher, NEW SPECIES

Female. —9.5mm. Head: Frons (Pl. 1) width/height 2/1, with brownish to silvery pollinosity, subcircular lateral black pollinose spots touch or nearly touch callus and eyes, spots in some light show small light-colored setae around each as well as around the smaller median dark spot from which there is a median vertexal pollinose line; vertexal area not clearly defined by pattern; callus dark brown, dorsal margin horizontal with a small median triangular projection; subcallus dark brown and cleft; face silvery pollinose with a small black spot below each antennal base; parafacials with an extensive black pollinose area which touches eyes; beardless; antenna (Pl. 1) with scape about four-fifths as long as flagellomere and narrower than the greatest width of the flagellomere, light brown; flagellomere brown, narrow, style slightly darker; palpus cream-colored with brown setae. Thorax: with a narrow median longitudinal silvery pollinose stripe to center of disc; submedian stripes shorter and followed by a silvery spot, setae brown with smaller scattered golden setae; posterior margin of disc silvery pollinose; scutellum silvery pollinose along anterior margin and median area, fine brown scutellar setae; pleura silvery pollinose. Wing: (Pl. 2) pattern slightly variable in marginal cell, paratype with a broader rosette; in anal region of paratype, hyaline stripes connected by a longitudinal hyaline stripe. Halter: with stem and apical third of knob cream-colored, basal two-thirds of knob brownish. Legs: dark brown, forecoxa with basal half silvery pollinose; forefemur laterally silvery pollinose; foretibia with basal fourth lighter; midfemur with basal two-thirds lighter; midtibia with a narrow light ring and two other indistinct rings; midbasitarsus lighter except at apex; basal two-fifths of hindtibia lighter and a hint of

subapical light ring; basal portion of hind tarsus lighter. Abdomen: dark brown with scattered golden setae, TII-TV with posterior margins silvery pollinose, TII with a median T-shaped pollinose pattern; TIII-TVII with submedian elongated silvery pollinose spots; sternites dark brown.

Holotype female. —CAMBODIA, Kbal Trach, 12 May 1958 (P. F. Beales). In the collection of the California Academy of Sciences.

Paratopotype. —slightly damaged female with the same data.

This species is most closely related *H. biroi* Szilady, 1926 from which it may be distinguished by its larger size, its well-defined parafacial spots, differences in the apical hyaline spots of the wing and its lack of median light markings on any but the second abdominal tergite.

10. *Haematopota gobindai* Coher, NEW SPECIES

Although much of this specimen is obscured by fungus, it clearly represents a new taxon which I take pleasure in naming for a close companion and co-worker for over two years in the Nepal terai, Gobinda Prasad Joshi.

Female. —8.5mm. Head: Frons (Pl.1) with width/height 2/1 and with large oval lateral black pollinose spots which do not touch margins of eyes or callus; callus brownish yellow with a broad dorsal median triangle; subcallus reddish brown; antenna with scape about four-fifths as long as flagellomere and as wide as widest part of flagellomere and more yellowish than light brown flagellomere; style dark brown. Thorax, legs and abdomen cannot be characterized. Wing: (Pl. 2).

Holotype female. —NEPAL, Neghauri, 9 April 1957 (G. P. Joshi), at light. In the collection of the California Academy of Sciences.

This species appears, based on wing characteristics, to be most closely related to *H. punctifera* Bigot, 1891. It may be told from that species by its larger size, the w/h proportion of the frons and the shape and pattern of the wing, particularly the included dark spot within the wide apical hyaline band and the hyaline areas of all posterior margin cells.

11. *Haematopota howarthi* Stone and Philip, 1974

1974. Stone and Philip, *ibid*: 111,f,m, figs.4, 125.

This species has been recorded from Laos.

Records. —LAOS, Vientiane-Pak San Rd., 40 miles E., 21 June 1959,f; same data, 80 miles E.,f, (P. F. Beales).

12. *Haematopota pachycera* Bigot, 1890

1890. Bigot, Paris Mus. d'Hist. Nat. Nouv. Arch.(3), 2:206,f.

1974. Stone and Philip, *ibid*: 155,f, figs.23,147.

Variation in the shape of the flagellomere of the antenna, the vertexal pattern and its setation, the tomentum and setae of the scutellum as well as the wing pattern may indicate that there is a complex of species involved rather than the wide variation I presently attribute to this species.

The flagellomere is variously shaped and may either taper distally or be widened following a taper. The vertex is somewhat variable in the extent of its pattern and setation and the scutellar pattern is variable to the extent reported by Stone and Philip. Although basically similar, the wing pattern is highly variable.

Records.—THAILAND, Chiangmai Province, 1959, Sarapee, 6 July,f; 30 July,2f; Chompu, 27 July,f; Nong Quai, 23 Sept.,f; Trang Province, Lamor, Vill. #4, 18 April 1960,f; 10 May 1960,f; Bang Mark, 29 April 1959,f. LAOS, 1959, Vientiane-Pak San Rd., 21 June, 40 miles E.,f; 21 June, 80 miles E.,f; Pak San-Pak Dang Rd., 21 June,f.

13. *Haematopota singularis* Ricardo, 1911

1911. Ricardo, Rec. Indian Mus.4:339,f, fig.

1963. Philip, Pacific Ins.5(3):530,f, fig.; as *H. s. vietnamensis*.

1974. Stone and Philip, *ibid*:176,f,synonymy, figs.9,131.

My specimens show the following variations from those described by Ricardo and by Stone and Philip. Paired frontal spots large and subquadrate, surrounded by a ring of lighter pollinosity; median spot with a longitudinal light line of pollinosity running onto the vertexal area and also anteriorly on one specimen, plus a broad m-like marking of light pollinosity reaching to the paired frontal spots; eye margins with light pollinosity; callus dark brown; apex of scape plus pedicel dark. Thorax with the light areas and stripes silvery; pleura with two dark bands, one extending from the wing base to the spiracle, the second extending from the wing base around the sternites and including the base of the forecoxa. Wing with extensive brown markings in the oblique stripe of one specimen; halter light at apex. Legs with midbasitarsus definitely lighter-colored except at tip; hindfemur densely clothed with dark hairs along the entire length of dorsal and ventral surface; hind basitarsus quite swollen. Abdomen with TVI and TVII with a pair of submedian light spots, those on TVII much larger. Spermathecae narrow, pigmented and sclerotized, each with the terminal portion differently shaped, one strongly and broadly narrowed, a second narrowed less close to the tip and a third rounded.

Record.—CAMBODIA, Kbal Trach, 12 May 1958,3f.

These three specimens, one of which is lacking head and abdomen, are noted as being taken on carabao. The laterally split abdomen of one is due to engorgement with blood, a condition not uncommon in other field caught flies. This is the first record of this species in Cambodia.

14. *Haematopota splendens* Schuurmans Stekhoven, 1929

1929. Schuurmans Stekhoven, Treubia 6(Suppl.):95,f.

1974. Stone and Philip, *ibid*:179,f,m, figs.48,171.

Record.—THAILAND, Pattalung Province, Khouw Pup Pah, 26 June 1960.

Taken flying with *vimoli*. Dr. Philip has kindly supplied me with a copy of the data on the Thai collection of this species. Unfortunately, I have no better luck in deciphering the cryptic data than he did. However, it is interesting to note that the specimen was taken at 5500' on 7 April, 1939.

15. *Haematopota vimoli* Coher, NEW SPECIES

Female.—8.5–9.5mm. Head: Frons (Pl. 1) width/height about 2/1, pollinosity variable, silvery to silvery-black to brownish-black and with brown setae; vertexal area usually darker; lateral dark spots subcircular and variably surrounded by lighter-colored pollinosity which forms a line running posteriorly through the median line of the vertex; callus red-brown, with dorsal margin variable in shape; subcallar

area black medially and cleft; face medianly black pollinose and large lateral black pollinose triangles on the parafacials; beard white; antenna (Pl. 1) with scape slightly longer than flagellomere, style brownish; palpus brown with whitish pollinosity. Thorax: scutum with anterior narrowly silvery, disc and scutellum brown with golden setae; pleura whitish pollinose. Wing: (Pl. 2) much like *H. helviventer*. Halter: light stem and dark knob. Legs: dark brown with white markings as follows, basal third of foretibia, basal four-fifths of midtibia and barely so on base of basitarsus, basal two-thirds of hindtibia. Abdomen: TI-TVI dark brown with posterior margin of TII entirely or partly light-colored and a narrow pollinose triangle projecting two-thirds of way to anterior margin, clothed with golden setation particularly at posterior margin of each segment; SI-SVI whitish with a darker median patch on SIII-SVI.

Holotype female.—THAILAND, Trang Province, Chong, 15 June 1960, Shannon trap. In the collection of the California Academy of Sciences.

Paratopotypes.—All taken in Shannon trap. 1960: 10 May,f; 15 June,7f; 29 June,4f; Paratype: Pattalung Province, Khouw Pup Pah, 26 June 1960,f.

T. vimoli is clearly related to *T. spenceri* Stone and Philip, 1974 and *T. helviventer* Stone and Philip, 1974 but is clearly separable based on the w/h of the frons which is wider than high, the presence of large black parafacial spots and the form of the long, slim flagellomere of the very narrow antenna.

This jungle species is named for Dr. Vimol Notananda of Chiangmai, Thailand, who so graciously supported my activities in that country.

It is of interest to note that certain species were taken flying at the same time and place with other tabanids. The following listing is noted:

H. albofasciatipennis with *Tabanus adhabarensis* and *Chrysops dispar* on 4 July 1957 north of the Siwalik Hills and with *T. albosetosus* and *T. nepalensis* on 5 July 1957 south of the Siwalik Hills, Nepal.

H. bicolor with *T. albosetosus* on 6 June 1956, with *T. jucundus* on 16 June 1956, with *T. subcallosus*, *T. teraiensis*, *T. jacobarius* and *T. nepalensis* on 30 July 1956, with *T. jacobarius* on 8 July 1956 and 29 August 1957, all in Amlekhganj, Nepal.

H. cilipes with *T. aurilineatus* on 8 June 1960 in Trang Province, Thailand.

H. pachycera with *T. konis* on 27 July 1959 in Chiangmai Province and with *T. brunipennis* on 29 April 1959 in Trang Province, Thailand.

H. vimoli with *T. hybridus*, *T. subhybridus*, *T. brunnicolor*, *T. caduceus*, *T. griseipalpis*, *T. macdonaldi*, *C. dispar* and *C. fixissimus* on 15 June 1960; with *H. splendens* on 26 June 1960; with *T. hybridus* and *T. subhybridus* on 29 June 1960. All records from Trang Province, Thailand.

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